

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
10 January 2002 (10.01.2002)

PCT

(10) International Publication Number
WO 02/02587 A1

- (51) International Patent Classification⁷: C07H 21/04, C12N 15/10, 15/11, 15/12
- (21) International Application Number: PCT/US01/20917
- (22) International Filing Date: 29 June 2001 (29.06.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/215,135 30 June 2000 (30.06.2000) US
60/225,266 14 August 2000 (14.08.2000) US
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**
- with international search report
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
 - with (an) indication(s) in relation to deposited biological material furnished under Rule 13bis separately from the description
 - with sequence listing part of description published separately in electronic form and available upon request from the International Bureau
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 02/02587 A1

(54) Title: B7-LIKE POLYNUCLEOTIDES, POLYPEPTIDES, AND ANTIBODIES

(57) Abstract: The present invention relates to novel human B7-like polypeptides and isolated nucleic acids containing the coding regions of the genes encoding such polypeptides. Also provided are vectors, host cells, antibodies, and recombinant methods for producing human B7-like polypeptides. The invention further relates to diagnostic and therapeutic methods useful for diagnosing and treating disorders related to these novel human B7-like polypeptides.

INTERNATIONAL SEARCH REPORT

Int. application No.
PCT/US01/20917

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07H 21/04; C12N 15/10, 15/11, 15/12

US CL : 536/23.1, 23.5; 435/69.1, 326, 320.1, 455

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.5; 435/69.1, 326, 320.1, 455

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST, DIALOG, BIOSIS, CA, EMBASE, MEDLINE

search terms: fiscella, ni, ruben, b7, b7-1, b7-2, cd80, cd86

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 00/36107 A (CORIXA CORPORATION) 22 JUNE 2000, see entire document, particularly SEQ ID NO: 391	1-10, 14, 15

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"A" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 01 OCTOBER 2001	Date of mailing of the international search report 16 NOV 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3330	Authorized officer PHILLIP GANIBEL Telephone No. (703) 308-0796

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/20917

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-10, 14, 15

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

In ional application No.
PCT/US01/20917

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Groups 1-49, claims 1-10, 14, 15, all in part, drawn to an isolated nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively as well as vectors host cells and methods of making a proteins.

For example, If Group 1 is elected, this correlates to Gene No. 1, ATCC Deposit No. PTA02332, SE ID NO: 2 and SEQ ID NO: Y

It is noted that the Groups would be numbering 7, if the X and Y sequences are limited to each row. The Groups number 49, if one can pick and choose a separate X and a separate Y from Table 1.

Applicant is invited to clarify the number of possibilities intended.

Groups 50-98, claims 11, 12 and 16, all in part, drawn to proteins comprising sequences encoded by SEQ ID NO: X and a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively.

Groups 99-147, claim 13, all in part, drawn to an antibody that binds a protein comprising sequences encoded by SEQ ID NO: X and a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively.

Groups 148-196, claim 17, all in part, drawn to methods of preventing or treating a medical conditions with an isolated nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively.

Groups 197-245, claim 18, all in part, drawn to methods of diagnosing a pathological condition via an isolated nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively.

Groups 246-294, claim 19, all in part, drawn to methods of diagnosing a pathological condition via an antibody that binds a protein encoded by isolated nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively

Groups 295-343, claims 20-21, all in part, drawn to methods of identifying a binding partner of a peptide encoded by isolated nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/20917

Groups 344-392, claim 22, all in part, drawn to methods of preventing or treating a medical condition with a protein encoded by the nucleic acids of SEQ ID NO: X or encoding a peptide of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1 and correspond to one of the cDNA clone IDs, respectively.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack Unity of Invention because they are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for more than one species to be searched, the appropriate additional search fees must be paid. The species are as follows:

The polynucleotides and polypeptides of each of the claims in Table 1 are unrelated, each to the other. The polynucleotides sequence encode structurally distinct polypeptides and do not share a special technical feature. Further the technical feature that links the DNA, proteins, antibody and methods is not a contribution over the prior art of Corixa Corporation (WO 00/36107), particularly SEQ ID NO: 391. Also, see the Search Report. Thus, the technical feature of the polynucleotide sequence is not special and the Groups are not so linked under PCT Rule 13.1. Additionally the claimed methods encompassed different ingredients, process steps and endpoints, which are not so coextensive and which do not share the same technical feature.

The polynucleotides and polypeptides of each of the clones in Table 1 are unrelated, each to other. The polynucleotides sequences encode structurally distinct polypeptides and do not share a special technical feature. Furthermore, the technical feature that links the DNA, protein, antibody and methods of PTA-2332 is not a contribution over the prior art of Corixa Corporation (WO 00/36107), particularly SEQ ID NO: 391 set forth in the Search Report. Thus, the technical feature of the polynucleotide sequence is not special and the Groups are not so linked under PCT Rule 13.1. Additionally, the claimed methods encompass different ingredients, process steps and endpoints which are not coextensive and which do not share the same technical feature.

<110> Human Genome Sciences, Inc.

<120> B7-Like Polynucleotides, Polypeptides, and Antibodies

<130> PT124PCT

<140> Unassigned

<141> 2001-06-29

<150> 60/215,135

<151> 2000-06-30

<150> 60/225,266

<151> 2000-08-14

<160> 49

<170> PatentIn Ver. 2.0

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<213> Homo sapiens

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<220>

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<212> DNA

<213> Homo sapiens

<220>

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<212> DNA

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<223> n equals a,t,g, or c

<220>

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<222> (778)

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<210> 12

<211> 2008

<212> DNA

<213> Homo sapiens

<400> 12

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<210> 13

<211> 2799

<212> DNA

<213> Homo sapiens

<400> 13

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<210> 14

<211> 282

<212> PRT

<213> Homo sapiens

<400> 14

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      20             25             30

Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala Gly Asn Ile
      35             40             45

Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro Asp Ile Lys Leu
      50             55             60

Ser Asp Ile Val Ile Gln Trp Leu Lys Glu Gly Val Leu Gly Leu Val
      65             70             75             80

His Glu Phe Lys Glu Gly Lys Asp Glu Leu Ser Glu Gln Asp Glu Met
      85             90             95

Phe Arg Gly Arg Thr Ala Val Phe Ala Asp Gln Val Ile Val Gly Asn
      100            105            110

Ala Ser Leu Arg Leu Lys Asn Val Gln Leu Thr Asp Ala Gly Thr Tyr
      115            120            125

Lys Cys Tyr Ile Ile Thr Ser Lys Gly Lys Gly Asn Ala Asn Leu Glu
      130            135            140

Tyr Lys Thr Gly Ala Phe Ser Met Pro Glu Val Asn Val Asp Tyr Asn
      145            150            155            160

Ala Ser Ser Glu Thr Leu Arg Cys Glu Ala Pro Arg Trp Phe Pro Gln
      165            170            175

Pro Thr Val Val Trp Ala Ser Gln Val Asp Gln Gly Ala Asn Phe Ser

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 210 215 220
 Ile Phe Ile Pro Ser Cys Ile Ile Ala Phe Ile Phe Ile Ala Thr Val
 225 230 235 240
 Ile Ala Leu Arg Lys Gln Leu Cys Gln Lys Leu Tyr Ser Ser Lys Asp
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 Val Asn Leu Asn Leu Trp Ser Trp Glu Pro Gly
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<210> 16
 <211> 318
 <212> PRT
 <213> Homo sapiens

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 Gly Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala
 35 40 45
 Glu Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val
 50 55 60
 His Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln
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 Tyr Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg
 85 90 95
 Ile Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr
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 Gly Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu
 115 120 125
 Leu Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Ala Gly
 130 135 140
 Tyr Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe
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<210> 17
<211> 454
<212> PRT
<213> Homo sapiens
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<400> 17
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Leu Leu Leu Ser Leu Cys Ala Leu Val Ser Ala Gln Phe Thr Val Val
      20              25              30

Gly Pro Ala Asn Pro Ile Leu Ala Met Val Gly Glu Asn Thr Thr Leu
      35              40              45

Arg Cys His Leu Ser Pro Glu Lys Asn Ala Glu Asp Met Glu Val Arg
      50              55              60

Trp Phe Arg Ser Gln Phe Ser Pro Ala Val Phe Val Tyr Lys Gly Gly
  65              70              75              80

Arg Glu Arg Thr Glu Glu Gln Met Glu Glu Tyr Arg Gly Arg Ile Thr
      85              90              95

Phe Val Ser Lys Asp Ile Asn Arg Gly Ser Val Ala Leu Val Ile His
      100             105             110

Asn Val Thr Ala Gln Glu Asn Gly Ile Tyr Arg Cys Tyr Phe Gln Glu
      115             120             125

Gly Arg Ser Tyr Asp Glu Ala Ile Leu Arg Leu Val Val Ala Gly Leu
      130             135             140

Gly Ser Lys Pro Leu Ile Glu Ile Lys Ala Gln Glu Asp Gly Ser Ile

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Trp Arg Asp Pro Tyr Gly Glu Val Val Pro Ala Leu Lys Glu Val Ser			
	180	185	190
Ile Ala Asp Ala Asp Gly Leu Phe Met Val Thr Thr Ala Val Ile Ile			
	195	200	205
Arg Asp Lys Tyr Val Arg Asn Val Ser Cys Ser Val Asn Asn Thr Leu			
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Leu Gly Gln Glu Lys Glu Thr Val Ile Phe Ile Pro Glu Ser Phe Met			
225	230	235	240
Pro Ser Ala Ser Pro Trp Met Val Ala Leu Ala Val Ile Leu Thr Ala			
	245	250	255
Ser Pro Trp Met Val Ser Met Thr Val Ile Leu Ala Val Phe Ile Ile			
	260	265	270
Phe Met Ala Val Ser Ile Cys Cys Ile Lys Lys Leu Gln Arg Glu Lys			
	275	280	285
Lys Ile Leu Ser Gly Glu Lys Lys Val Glu Gln Glu Glu Lys Glu Ile			
	290	295	300
Ala Gln Gln Leu Gln Glu Glu Leu Arg Trp Arg Arg Thr Phe Leu His			
305	310	315	320
Ala Ala Asp Val Val Leu Asp Pro Asp Thr Ala His Pro Glu Leu Phe			
	325	330	335
Leu Ser Glu Asp Arg Arg Ser Val Arg Arg Gly Pro Tyr Arg Gln Arg			
	340	345	350
Val Pro Asp Asn Pro Glu Arg Phe Asp Ser Gln Pro Cys Val Leu Gly			
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Trp Glu Ser Phe Ala Ser Gly Lys His Tyr Arg Gly Asn Phe Thr Glu			
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Trp Gly Pro Thr Arg Ala Tyr Arg Ile Asn Ser Leu Asp Ser Gln Pro			
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Cys Arg Lys Pro Trp Pro Ser Gln Gln Pro Pro His Asn Pro Pro Asn			
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<210> 18

<211> 414

<212> PRT

<213> Homo sapiens

<400> 18

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Met Glu Asn Tyr Arg Lys Arg Glu Asp Leu Val Tyr Gln Ser Thr Val
 35             40             45

Arg Leu Pro Glu Val Arg Ile Ser Asp Asn Gly Pro Tyr Glu Cys His
 50             55             60

Val Gly Ile Tyr Asp Arg Ala Thr Arg Glu Lys Val Val Leu Ala Ser
 65             70             75             80

Gly Asn Ile Phe Leu Asn Val Met Ala Pro Pro Thr Ser Ile Glu Val
          85             90             95

Val Ala Ala Asp Thr Pro Ala Pro Phe Ser Arg Tyr Gln Ala Gln Asn
          100             105             110

Phe Thr Leu Val Cys Ile Val Ser Gly Gly Lys Pro Ala Pro Met Val
          115             120             125

Tyr Phe Lys Arg Asp Gly Glu Pro Ile Asp Ala Val Pro Leu Ser Glu
          130             135             140

Pro Pro Ala Ala Ser Ser Gly Pro Leu Gln Asp Ser Arg Pro Phe Arg
          145             150             155             160

Ser Leu Leu His Arg Asp Leu Asp Asp Thr Lys Met Gln Lys Ser Leu
          165             170             175

Ser Leu Leu Asp Ala Glu Asn Arg Gly Gly Arg Pro Tyr Thr Glu Arg
          180             185             190

Pro Ser Arg Gly Leu Thr Pro Asp Pro Asn Ile Leu Leu Gln Pro Thr
          195             200             205

Thr Glu Asn Ile Pro Glu Thr Val Val Ser Arg Glu Phe Pro Arg Trp
          210             215             220

Val His Ser Ala Glu Pro Thr Tyr Phe Leu Arg His Ser Arg Thr Pro
          225             230             235             240

Ser Ser Asp Gly Thr Val Glu Val Arg Ala Leu Leu Thr Trp Thr Leu
          245             250             255

Asn Pro Gln Ile Asp Asn Glu Ala Leu Phe Ser Cys Glu Val Lys His
          260             265             270

Pro Ala Leu Ser Met Pro Met Gln Ala Glu Val Thr Leu Val Ala Pro
          275             280             285

Lys Gly Pro Lys Ile Val Met Thr Pro Ser Arg Ala Arg Val Gly Asp
          290             295             300

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Thr Val Arg Ile Leu Val His Gly Phe Gln Asn Glu Val Phe Pro Glu
 305 310 315 320
 Pro Met Phe Thr Trp Thr Arg Val Gly Ser Arg Leu Leu Asp Gly Ser
 325 330 335
 Ala Glu Phe Asp Gly Lys Glu Leu Val Leu Glu Arg Val Pro Ala Glu
 340 345 350
 Leu Asn Gly Ser Met Tyr Arg Cys Thr Ala Gln Asn Pro Leu Gly Ser
 355 360 365
 Thr Asp Thr His Thr Arg Leu Ile Val Phe Glu Asn Pro Asn Ile Pro
 370 375 380
 Arg Gly Thr Glu Asp Ser Asn Gly Ser Ile Gly Pro Thr Gly Ala Arg
 385 390 395 400
 Leu Thr Leu Val Leu Ala Leu Thr Val Ile Leu Glu Leu Thr
 405 410

<210> 19
 <211> 159
 <212> PRT
 <213> Homo sapiens

<400> 19
 Met Glu Pro Ala Ala Ala Leu His Phe Ser Arg Pro Ala Ser Leu Leu
 1 5 10 15
 Leu Leu Leu Ser Leu Cys Ala Leu Val Ser Ala Gln Val Thr Val Val
 20 25 30
 Gly Pro Thr Asp Pro Ile Leu Ala Met Val Gly Glu Asn Thr Thr Leu
 35 40 45
 Arg Cys Cys Leu Ser Pro Glu Glu Asn Ala Glu Asp Met Glu Val Arg
 50 55 60
 Trp Phe Gln Ser Gln Phe Ser Pro Ala Val Phe Val Tyr Lys Gly Gly
 65 70 75 80
 Arg Glu Arg Thr Glu Glu Gln Lys Glu Glu Tyr Arg Gly Arg Thr Thr
 85 90 95
 Phe Val Ser Lys Asp Ser Arg Gly Ser Val Ala Leu Ile Ile His Asn
 100 105 110
 Val Thr Ala Glu Asp Asn Gly Ile Tyr Gln Cys Tyr Phe Gln Glu Gly
 115 120 125
 Arg Ser Cys Asn Glu Ala Ile Leu His Leu Val Val Ala Asp Gln His
 130 135 140
 Asn Pro Leu Ser Trp Ile Pro Ile Pro Gln Gly Thr Leu Ser Leu
 145 150 155

<210> 20

<211> 461

<212> PRT

<213> Homo sapiens

<400> 20

Met Ala Leu Met Leu Ser Leu Val Leu Ser Leu Leu Lys Leu Gly Ser
 1 5 10 15

Gly Gln Trp Gln Val Phe Gly Pro Asp Lys Pro Val Gln Ala Leu Val
 20 25 30

Gly Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala
 35 40 45

Glu Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val
 50 55 60

His Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln
 65 70 75 80

Tyr Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg
 85 90 95

Ile Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr
 100 105 110

Gly Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu
 115 120 125

Leu Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Thr Gly
 130 135 140

Tyr Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe
 145 150 155 160

Pro Arg Pro Thr Ala Lys Trp Lys Gly Pro Gln Gly Gln Asp Leu Ser
 165 170 175

Thr Asp Ser Arg Thr Asn Arg Asp Met His Gly Leu Phe Asp Val Glu
 180 185 190

Ile Ser Leu Thr Val Gln Glu Asn Ala Gly Ser Ile Ser Cys Ser Met
 195 200 205

Arg His Ala His Leu Ser Arg Glu Val Glu Ser Arg Val Gln Ile Gly
 210 215 220

Asp Thr Phe Phe Glu Pro Ile Ser Trp His Leu Ala Thr Lys Val Leu
 225 230 235 240

Gly Ile Leu Cys Cys Gly Leu Phe Phe Gly Ile Val Gly Leu Lys Ile
 245 250 255

Phe Phe Ser Lys Phe Gln Trp Lys Ile Gln Ala Glu Leu Asp Trp Arg
 260 265 270

Arg Lys His Gly Gln Ala Glu Leu Arg Asp Ala Arg Lys His Ala Val
 275 280 285

Glu Val Thr Leu Asp Pro Glu Thr Ala His Pro Lys Leu Cys Val Ser
 290 295 300

Asp Leu Lys Thr Val Thr His Arg Lys Ala Pro Gln Glu Val Pro His
305 310 315 320

Ser Glu Lys Arg Phe Thr Arg Lys Ser Val Val Ala Ser Gln Ser Phe
325 330 335

Gln Ala Gly Lys His Tyr Trp Glu Val Asp Gly Gly His Asn Lys Arg
340 345 350

Trp Arg Val Gly Val Cys Arg Asp Asp Val Asp Arg Arg Lys Glu Tyr
355 360 365

Val Thr Leu Ser Pro Asp His Gly Tyr Trp Val Leu Arg Leu Asn Gly
370 375 380

Glu His Leu Tyr Phe Thr Leu Asn Pro Arg Phe Ile Ser Val Phe Pro
385 390 395 400

Arg Thr Pro Pro Thr Lys Ile Gly Val Phe Leu Asp Tyr Glu Cys Gly
405 410 415

Thr Ile Ser Phe Phe Asn Ile Asn Asp Gln Ser Leu Ile Tyr Thr Leu
420 425 430

Thr Cys Arg Phe Glu Gly Leu Leu Arg Pro Tyr Ile Glu Tyr Pro Ser
435 440 445

Tyr Asn Glu Gln Asn Gly Thr Pro Arg Asp Lys Gln Gln
450 455 460

<210> 21

<211> 13

<212> PRT

<213> Homo sapiens

<400> 21

Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile
1 5 10

<210> 22

<211> 23

<212> PRT

<213> Homo sapiens

<400> 22

Leu Phe Leu Leu Leu Glu Ile Ser Thr His Leu Cys Phe Trp Lys Ser
1 5 10 15

Leu Arg Lys Leu Glu Gly Lys
20

<210> 23

<211> 93

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (89)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (92)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 23

Met	Ile	Phe	Leu	Leu	Leu	Met	Leu	Ser	Leu	Glu	Leu	Gln	Leu	His	Gln
1				5					10					15	

Ile	Ala	Ala	Leu	Phe	Thr	Val	Thr	Val	Pro	Lys	Glu	Leu	Tyr	Ile	Ile
			20					25					30		

Glu	His	Gly	Ser	Asn	Val	Thr	Leu	Glu	Cys	Asn	Phe	Asp	Thr	Gly	Ser
		35					40					45			

His	Val	Asn	Leu	Gly	Ala	Ile	Thr	Ala	Ser	Leu	Gln	Lys	Val	Glu	Asn
	50					55					60				

Asp	Thr	Ser	Pro	His	Arg	Glu	Arg	Ala	Thr	Leu	Leu	Glu	Glu	Gln	Leu
65					70					75					80

Pro	Leu	Gly	Lys	Ala	Ser	Phe	Pro	Xaa	Leu	Lys	Xaa	Lys
			85						90			

<210> 24

<211> 461

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (234)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (236)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 24

Met	Ala	Leu	Met	Leu	Ser	Leu	Val	Leu	Ser	Leu	Leu	Lys	Leu	Gly	Ser
1				5					10					15	

Gly	Gln	Trp	Gln	Val	Phe	Gly	Pro	Asp	Lys	Pro	Val	Gln	Ala	Leu	Val
			20					25					30		

Gly	Glu	Asp	Ala	Ala	Phe	Ser	Cys	Phe	Leu	Ser	Pro	Lys	Thr	Asn	Ala
		35					40					45			

Glu	Ala	Met	Glu	Val	Arg	Phe	Phe	Arg	Gly	Gln	Phe	Ser	Ser	Val	Val
	50					55				60					

His	Leu	Tyr	Arg	Asp	Gly	Lys	Asp	Gln	Pro	Phe	Met	Gln	Met	Pro	Gln
65					70					75					80

Tyr	Gln	Gly	Arg	Thr	Lys	Leu	Val	Lys	Asp	Ser	Ile	Ala	Glu	Gly	Arg
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

21

Thr Ile Ser Phe Phe Asn Ile Asn Asp Gln Ser Leu Ile Tyr Thr Leu
 420 425 430

Thr Cys Arg Phe Glu Gly Leu Leu Arg Pro Tyr Ile Glu Tyr Pro Ser
 435 440 445

Tyr Asn Glu Gln Asn Gly Thr Pro Arg Asp Lys Gln Gln
 450 455 460

<210> 25
 <211> 402
 <212> PRT
 <213> Homo sapiens

<400> 25
 Met Glu Pro Ala Ala Ala Leu His Phe Ser Arg Pro Ala Ser Leu Leu
 1 5 10 15

Leu Leu Leu Ser Leu Cys Ala Leu Val Ser Ala Gln Phe Thr Val Val
 20 25 30

Gly Pro Ala Asn Pro Ile Leu Ala Met Val Gly Glu Asn Thr Thr Leu
 35 40 45

Arg Cys His Leu Ser Pro Glu Lys Asn Ala Glu Asp Met Glu Val Arg
 50 55 60

Trp Phe Arg Ser Gln Phe Ser Pro Ala Val Phe Val Tyr Lys Gly Gly
 65 70 75 80

Arg Glu Arg Thr Glu Glu Gln Met Glu Glu Tyr Arg Gly Arg Ile Thr
 85 90 95

Phe Val Ser Lys Asp Ile Asn Arg Gly Ser Val Ala Leu Val Ile His
 100 105 110

Asn Val Thr Ala Gln Glu Asn Gly Ile Tyr Arg Cys Tyr Phe Gln Glu
 115 120 125

Gly Arg Ser Tyr Asp Glu Ala Ile Leu Arg Leu Val Val Ala Gly Leu
 130 135 140

Gly Ser Lys Pro Leu Ile Glu Ile Lys Ala Gln Glu Asp Gly Ser Ile
 145 150 155 160

Trp Leu Glu Cys Ile Ser Gly Gly Trp Tyr Pro Glu Pro Leu Thr Val
 165 170 175

Trp Arg Asp Pro Tyr Gly Glu Val Val Pro Ala Leu Lys Glu Val Ser
 180 185 190

Ile Ala Asp Ala Asp Gly Leu Phe Met Val Thr Thr Ala Val Ile Ile
 195 200 205

Arg Asp Lys Tyr Val Arg Asn Val Ser Cys Ser Val Asn Asn Thr Leu
 210 215 220

Leu Gly Gln Glu Lys Glu Thr Val Ile Phe Ile Pro Glu Ser Phe Met
 225 230 235 240

Pro	Ser	Ala	Ser	Pro	Trp	Met	Val	Ala	Leu	Ala	Val	Ile	Leu	Thr	Ala
245				250				255							
Ser	Pro	Trp	Met	Val	Ser	Met	Thr	Val	Ile	Leu	Ala	Val	Phe	Ile	Ile
260				265				270							
Phe	Met	Ala	Val	Ser	Ile	Cys	Cys	Ile	Lys	Lys	Leu	Gln	Arg	Glu	Lys
275				280				285							
Lys	Ile	Leu	Ser	Gly	Glu	Lys	Lys	Val	Glu	Gln	Glu	Glu	Lys	Glu	Ile
290				295				300							
Ala	Gln	Gln	Leu	Gln	Glu	Glu	Leu	Arg	Trp	Arg	Arg	Thr	Phe	Leu	His
305				310				315				320			
Ala	Ala	Asp	Val	Val	Leu	Asp	Pro	Asp	Thr	Ala	His	Pro	Glu	Leu	Phe
325				330				335							
Leu	Ser	Glu	Asp	Arg	Arg	Ser	Val	Arg	Arg	Gly	Pro	Tyr	Arg	Gln	Arg
340				345				350							
Val	Pro	Asp	Asn	Pro	Glu	Arg	Phe	Asp	Ser	Gln	Pro	Cys	Val	Leu	Gly
355				360				365							
Trp	Glu	Ser	Phe	Ala	Ser	Gly	Lys	His	Tyr	Arg	Gly	Asn	Phe	Thr	Glu
370				375				380							
Trp	Gly	Pro	Thr	Arg	Ala	Tyr	Arg	Ile	Asn	Ser	Leu	Asp	Ser	Gln	Pro
385				390				395				400			
Cys Arg															

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<210> 26
<211> 20
<212> PRT
<213> Homo sapiens
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```
<400> 26
Ser Lys Ala Ser Leu Cys Val Ser Ser Phe Phe Ala Ile Ser Trp Ala
  1                      5                      10                      15
Leu Leu Pro Leu
      20
```

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<210> 27
<211> 255
<212> PRT
<213> Homo sapiens
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```

<400> 27
Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
  1             5             10             15

Ile Ile Leu Ala Gly Ala Ile Ala Leu Ile Ile Gly Phe Gly Ile Ser
      20             25             30

Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala Gly Asn Ile

```

35 40 45
 Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro Asp Ile Lys Leu
 50 55 60
 Ser Asp Ile Val Ile Gln Trp Leu Lys Glu Gly Val Leu Gly Leu Val
 65 70 75 80
 His Glu Phe Lys Glu Gly Lys Asp Glu Leu Ser Glu Gln Asp Glu Met
 85 90 95
 Phe Arg Gly Arg Thr Ala Val Phe Ala Asp Gln Val Ile Val Gly Asn
 100 105 110
 Ala Ser Leu Arg Leu Lys Asn Val Gln Leu Thr Asp Ala Gly Thr Tyr
 115 120 125
 Lys Cys Tyr Ile Ile Thr Ser Lys Gly Lys Gly Asn Ala Asn Leu Glu
 130 135 140
 Tyr Lys Thr Gly Ala Phe Ser Met Pro Glu Val Asn Val Asp Tyr Asn
 145 150 155 160
 Ala Ser Ser Glu Thr Leu Arg Cys Glu Ala Pro Arg Trp Phe Pro Gln
 165 170 175
 Pro Thr Val Val Trp Ala Ser Gln Val Asp Gln Gly Ala Asn Phe Ser
 180 185 190
 Glu Val Ser Asn Thr Ser Phe Glu Leu Asn Ser Glu Asn Val Thr Met
 195 200 205
 Lys Val Val Ser Val Leu Tyr Asn Val Thr Ile Asn Asn Thr Tyr Ser
 210 215 220
 Cys Met Ile Glu Asn Asp Ile Ala Lys Ala Thr Gly Asp Ile Lys Val
 225 230 235 240
 Thr Glu Ser Glu Ile Lys Arg Arg Ser His Leu Gln Leu Leu Asn
 245 250 255

 <210> 28
 <211> 231
 <212> PRT
 <213> Homo sapiens

 <400> 28
 Leu Ile Ile Gly Phe Gly Ile Ser Gly Arg His Ser Ile Thr Val Thr
 1 5 10 15
 Thr Val Ala Ser Ala Gly Asn Ile Gly Glu Asp Gly Ile Leu Ser Cys
 20 25 30
 Thr Phe Glu Pro Asp Ile Lys Leu Ser Asp Ile Val Ile Gln Trp Leu
 35 40 45
 Lys Glu Gly Val Leu Gly Leu Val His Glu Phe Lys Glu Gly Lys Asp
 50 55 60
 Glu Leu Ser Glu Gln Asp Glu Met Phe Arg Gly Arg Thr Ala Val Phe

65 70 75 80
 Ala Asp Gln Val Ile Val Gly Asn Ala Ser Leu Arg Leu Lys Asn Val
 85 90 95
 Gln Leu Thr Asp Ala Gly Thr Tyr Lys Cys Tyr Ile Ile Thr Ser Lys
 100 105 110
 Gly Lys Gly Asn Ala Asn Leu Glu Tyr Lys Thr Gly Ala Phe Ser Met
 115 120 125
 Pro Glu Val Asn Val Asp Tyr Asn Ala Ser Ser Glu Thr Leu Arg Cys
 130 135 140
 Glu Ala Pro Arg Trp Phe Pro Gln Pro Thr Val Val Trp Ala Ser Gln
 145 150 155 160
 Val Asp Gln Gly Ala Asn Phe Ser Glu Val Ser Asn Thr Ser Phe Glu
 165 170 175
 Leu Asn Ser Glu Asn Val Thr Met Lys Val Val Ser Val Leu Tyr Asn
 180 185 190
 Val Thr Ile Asn Asn Thr Tyr Ser Cys Met Ile Glu Asn Asp Ile Ala
 195 200 205
 Lys Ala Thr Gly Asp Ile Lys Val Thr Glu Ser Glu Ile Lys Arg Arg
 210 215 220
 Ser His Leu Gln Leu Leu Asn
 225 230

<210> 29

<211> 24

<212> PRT

<213> Homo sapiens

<400> 29

Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
 1 5 10 15

Ile Ile Leu Ala Gly Ala Ile Ala
 20

<210> 30

<211> 30

<212> PRT

<213> Homo sapiens

<400> 30

Pro Thr Trp Leu Leu His Ile Phe Ile Pro Ser Cys Ile Ile Ala Phe
 1 5 10 15

Ile Phe Ile Ala Thr Val Ile Ala Leu Arg Lys Gln Leu Cys
 20 25 30

<210> 31

<211> 218

<212> PRT

<213> Homo sapiens

<400> 31

Met Ile Phe Leu Leu Leu Met Leu Ser Leu Glu Leu Gln Leu His Gln
 1 5 10 15

Ile Ala Ala Leu Phe Thr Val Thr Val Pro Lys Glu Leu Tyr Ile Ile
 20 25 30

Glu His Gly Ser Asn Val Thr Leu Glu Cys Asn Phe Asp Thr Gly Ser
 35 40 45

His Val Asn Leu Gly Ala Ile Thr Ala Ser Leu Gln Lys Val Glu Asn
 50 55 60

Asp Thr Ser Pro His Arg Glu Arg Ala Thr Leu Leu Glu Glu Gln Leu
 65 70 75 80

Pro Leu Gly Lys Ala Ser Phe His Ile Pro Gln Val Gln Val Arg Asp
 85 90 95

Glu Gly Gln Tyr Gln Cys Ile Ile Ile Tyr Gly Val Ala Trp Asp Tyr
 100 105 110

Lys Tyr Leu Thr Leu Lys Val Lys Ala Ser Tyr Arg Lys Ile Asn Thr
 115 120 125

His Ile Leu Lys Val Pro Glu Thr Asp Glu Val Glu Leu Thr Cys Gln
 130 135 140

Ala Thr Gly Tyr Pro Leu Ala Glu Val Ser Trp Pro Asn Val Ser Val
 145 150 155 160

Pro Ala Asn Thr Ser His Ser Arg Thr Pro Glu Gly Leu Tyr Gln Val
 165 170 175

Thr Ser Val Leu Arg Leu Lys Pro Pro Pro Gly Arg Asn Phe Ser Cys
 180 185 190

Val Phe Trp Asn Thr His Val Arg Glu Leu Thr Leu Ala Ser Ile Asp
 195 200 205

Leu Gln Ser Gln Met Glu Pro Arg Thr His
 210 215

<210> 32

<211> 199

<212> PRT

<213> Homo sapiens

<400> 32

Leu Phe Thr Val Thr Val Pro Lys Glu Leu Tyr Ile Ile Glu His Gly
 1 5 10 15

Ser Asn Val Thr Leu Glu Cys Asn Phe Asp Thr Gly Ser His Val Asn
 20 25 30

Leu Gly Ala Ile Thr Ala Ser Leu Gln Lys Val Glu Asn Asp Thr Ser
 35 40 45

Pro His Arg Glu Arg Ala Thr Leu Leu Glu Glu Gln Leu Pro Leu Gly
 50 55 60
 Lys Ala Ser Phe His Ile Pro Gln Val Gln Val Arg Asp Glu Gly Gln
 65 70 75 80
 Tyr Gln Cys Ile Ile Ile Tyr Gly Val Ala Trp Asp Tyr Lys Tyr Leu
 85 90 95
 Thr Leu Lys Val Lys Ala Ser Tyr Arg Lys Ile Asn Thr His Ile Leu
 100 105 110
 Lys Val Pro Glu Thr Asp Glu Val Glu Leu Thr Cys Gln Ala Thr Gly
 115 120 125
 Tyr Pro Leu Ala Glu Val Ser Trp Pro Asn Val Ser Val Pro Ala Asn
 130 135 140
 Thr Ser His Ser Arg Thr Pro Glu Gly Leu Tyr Gln Val Thr Ser Val
 145 150 155 160
 Leu Arg Leu Lys Pro Pro Pro Gly Arg Asn Phe Ser Cys Val Phe Trp
 165 170 175
 Asn Thr His Val Arg Glu Leu Thr Leu Ala Ser Ile Asp Leu Gln Ser
 180 185 190
 Gln Met Glu Pro Arg Thr His
 195

<210> 33
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 33
 Met Ile Phe Leu Leu Leu Met Leu Ser Leu Glu Leu Gln Leu His Gln
 1 5 10 15

Ile Ala Ala

<210> 34
 <211> 93
 <212> .PRT
 <213> Homo sapiens

<400> 34
 Glu Leu Tyr Ile Ile Glu His Gly Ser Asn Val Thr Leu Glu Cys Asn
 1 5 10 15

Phe Asp Thr Gly Ser His Val Asn Leu Gly Ala Ile Thr Ala Ser Leu
 20 25 30

Gln Lys Val Glu Asn Asp Thr Ser Pro His Arg Glu Arg Ala Thr Leu
 35 40 45

Leu Glu Glu Gln Leu Pro Leu Gly Lys Ala Ser Phe His Ile Pro Gln

50 55 60
 Val Gln Val Arg Asp Glu Gly Gln Tyr Gln Cys Ile Ile Ile Tyr Gly
 65 70 75 80
 Val Ala Trp Asp Tyr Lys Tyr Leu Thr Leu Lys Val Lys
 85 90

 <210> 35
 <211> 94
 <212> PRT
 <213> Homo sapiens

 <400> 35
 Ser Tyr Arg Lys Ile Asn Thr His Ile Leu Lys Val Pro Glu Thr Asp
 1 5 10 15
 Glu Val Glu Leu Thr Cys Gln Ala Thr Gly Tyr Pro Leu Ala Glu Val
 20 25 30
 Ser Trp Pro Asn Val Ser Val Pro Ala Asn Thr Ser His Ser Arg Thr
 35 40 45
 Pro Glu Gly Leu Tyr Gln Val Thr Ser Val Leu Arg Leu Lys Pro Pro
 50 55 60
 Pro Gly Arg Asn Phe Ser Cys Val Phe Trp Asn Thr His Val Arg Glu
 65 70 75 80
 Leu Thr Leu Ala Ser Ile Asp Leu Gln Ser Gln Met Glu Pro
 85 90

 <210> 36
 <211> 301
 <212> PRT
 <213> Homo sapiens

 <400> 36
 Gln Trp Gln Val Phe Gly Pro Asp Lys Pro Val Gln Ala Leu Val Gly
 1 5 10 15
 Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala Glu
 20 25 30
 Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val His
 35 40 45
 Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln Tyr
 50 55 60
 Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg Ile
 65 70 75 80
 Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr Gly
 85 90 95
 Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu Leu
 100 105 110

Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Ala Gly Tyr
 115 120 125
 Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe Pro
 130 135 140
 Arg Pro Thr Ala Lys Trp Lys Gly Pro Gln Gly Gln Asp Leu Ser Thr
 145 150 155 160
 Asp Ser Arg Thr Asn Arg Asp Met His Gly Leu Phe Asp Val Glu Ile
 165 170 175
 Ser Leu Thr Val Gln Glu Asn Ala Gly Ser Ile Ser Cys Ser Met Arg
 180 185 190
 His Ala His Leu Ser Arg Glu Val Glu Ser Arg Val Gln Ile Gly Asp
 195 200 205
 Trp Arg Arg Lys His Gly Gln Ala Gly Lys Arg Lys Tyr Ser Ser Ser
 210 215 220
 His Ile Tyr Asp Ser Phe Pro Ser Leu Ser Phe Met Asp Phe Tyr Ile
 225 230 235 240
 Leu Arg Pro Val Gly Pro Cys Arg Ala Lys Leu Val Met Gly Thr Leu
 245 250 255
 Lys Leu Gln Ile Leu Gly Glu Val His Phe Val Glu Lys Pro His Ser
 260 265 270
 Leu Leu Gln Ile Ser Gly Gly Ser Thr Thr Leu Lys Lys Gly Pro Asn
 275 280 285
 Pro Trp Ser Phe Pro Ser Pro Cys Ala Leu Phe Pro Thr
 290 295 300

<210> 37
 <211> 17
 <212> PRT
 <213> Homo sapiens

<400> 37
 Met Ala Leu Met Leu Ser Leu Val Leu Ser Leu Leu Lys Leu Gly Ser
 1 5 10 15

Gly

<210> 38
 <211> 26
 <212> PRT
 <213> Homo sapiens

<400> 38
 Thr Ala Ser Pro Trp Met Val Ser Met Thr Val Ile Leu Ala Val Phe
 1 5 10 15

Ile Ile Phe Met Ala Val Ser Ile Cys Cys
 20 25

<210> 39
 <211> 254
 <212> PRT
 <213> Homo sapiens

<400> 39
 Met Glu Pro Ala Ala Leu His Phe Ser Arg Pro Ala Ser Leu Leu
 1 5 10 15
 Leu Leu Leu Ser Leu Cys Ala Leu Val Ser Ala Gln Phe Thr Val Val
 20 25 30
 Gly Pro Ala Asn Pro Ile Leu Ala Met Val Gly Glu Asn Thr Thr Leu
 35 40 45
 Arg Cys His Leu Ser Pro Glu Lys Asn Ala Glu Asp Met Glu Val Arg
 50 55 60
 Trp Phe Arg Ser Gln Phe Ser Pro Ala Val Phe Val Tyr Lys Gly Gly
 65 70 75 80
 Arg Glu Arg Thr Glu Glu Gln Met Glu Glu Tyr Arg Gly Arg Ile Thr
 85 90 95
 Phe Val Ser Lys Asp Ile Asn Arg Gly Ser Val Ala Leu Val Ile His
 100 105 110
 Asn Val Thr Ala Gln Glu Asn Gly Ile Tyr Arg Cys Tyr Phe Gln Glu
 115 120 125
 Gly Arg Ser Tyr Asp Glu Ala Ile Leu Arg Leu Val Val Ala Gly Leu
 130 135 140
 Gly Ser Lys Pro Leu Ile Glu Ile Lys Ala Gln Glu Asp Gly Ser Ile
 145 150 155 160
 Trp Leu Glu Cys Ile Ser Gly Gly Trp Tyr Pro Glu Pro Leu Thr Val
 165 170 175
 Trp Arg Asp Pro Tyr Gly Glu Val Val Pro Ala Leu Lys Glu Val Ser
 180 185 190
 Ile Ala Asp Ala Asp Gly Leu Phe Met Val Thr Thr Ala Val Ile Ile
 195 200 205
 Arg Asp Lys Tyr Val Arg Asn Val Ser Cys Ser Val Asn Asn Thr Leu
 210 215 220
 Leu Gly Gln Glu Lys Glu Thr Val Ile Phe Ile Pro Glu Ser Phe Met
 225 230 235 240
 Pro Ser Ala Ser Pro Trp Met Val Ala Leu Ala Val Ile Leu
 245 250

<210> 40
 <211> 227
 <212> PRT
 <213> Homo sapiens

<400> 40

Gln Phe Thr Val Val Gly Pro Ala Asn Pro Ile Leu Ala Met Val Gly
 1 5 10 15

Glu Asn Thr Thr Leu Arg Cys His Leu Ser Pro Glu Lys Asn Ala Glu
 20 25 30

Asp Met Glu Val Arg Trp Phe Arg Ser Gln Phe Ser Pro Ala Val Phe
 35 40 45

Val Tyr Lys Gly Gly Arg Glu Arg Thr Glu Glu Gln Met Glu Glu Tyr
 50 55 60

Arg Gly Arg Ile Thr Phe Val Ser Lys Asp Ile Asn Arg Gly Ser Val
 65 70 75 80

Ala Leu Val Ile His Asn Val Thr Ala Gln Glu Asn Gly Ile Tyr Arg
 85 90 95

Cys Tyr Phe Gln Glu Gly Arg Ser Tyr Asp Glu Ala Ile Leu Arg Leu
 100 105 110

Val Val Ala Gly Leu Gly Ser Lys Pro Leu Ile Glu Ile Lys Ala Gln
 115 120 125

Glu Asp Gly Ser Ile Trp Leu Glu Cys Ile Ser Gly Gly Trp Tyr Pro
 130 135 140

Glu Pro Leu Thr Val Trp Arg Asp Pro Tyr Gly Glu Val Val Pro Ala
 145 150 155 160

Leu Lys Glu Val Ser Ile Ala Asp Ala Asp Gly Leu Phe Met Val Thr
 165 170 175

Thr Ala Val Ile Ile Arg Asp Lys Tyr Val Arg Asn Val Ser Cys Ser
 180 185 190

Val Asn Asn Thr Leu Leu Gly Gln Glu Lys Glu Thr Val Ile Phe Ile
 195 200 205

Pro Glu Ser Phe Met Pro Ser Ala Ser Pro Trp Met Val Ala Leu Ala
 210 215 220

Val Ile Leu
 225

<210> 41

<211> 27

<212> PRT

<213> Homo sapiens

<400> 41

Met Glu Pro Ala Ala Ala Leu His Phe Ser Arg Pro Ala Ser Leu Leu
 1 5 10 15

Leu Leu Leu Ser Leu Cys Ala Leu Val Ser Ala
 20 25

<210> 42
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 42
 Gly Pro Thr Gly Ala Arg Leu Thr Leu Val Leu Ala Leu Thr Val Ile
 1 5 10 15
 Leu Glu Leu Thr
 20

<210> 43
 <211> 394
 <212> PRT
 <213> Homo sapiens

<400> 43
 Met Arg Glu Ile Val Trp Tyr Arg Val Thr Asp Gly Gly Thr Ile Lys
 1 5 10 15
 Gln Lys Ile Phe Thr Phe Asp Ala Met Phe Ser Thr Asn Tyr Ser His
 20 25 30
 Met Glu Asn Tyr Arg Lys Arg Glu Asp Leu Val Tyr Gln Ser Thr Val
 35 40 45
 Arg Leu Pro Glu Val Arg Ile Ser Asp Asn Gly Pro Tyr Glu Cys His
 50 55 60
 Val Gly Ile Tyr Asp Arg Ala Thr Arg Glu Lys Val Val Leu Ala Ser
 65 70 75 80
 Gly Asn Ile Phe Leu Asn Val Met Ala Pro Pro Thr Ser Ile Glu Val
 85 90 95
 Val Ala Ala Asp Thr Pro Ala Pro Phe Ser Arg Tyr Gln Ala Gln Asn
 100 105 110
 Phe Thr Leu Val Cys Ile Val Ser Gly Gly Lys Pro Ala Pro Met Val
 115 120 125
 Tyr Phe Lys Arg Asp Gly Glu Pro Ile Asp Ala Val Pro Leu Ser Glu
 130 135 140
 Pro Pro Ala Ala Ser Ser Gly Pro Leu Gln Asp Ser Arg Pro Phe Arg
 145 150 155 160
 Ser Leu Leu His Arg Asp Leu Asp Asp Thr Lys Met Gln Lys Ser Leu
 165 170 175
 Ser Leu Leu Asp Ala Glu Asn Arg Gly Gly Arg Pro Tyr Thr Glu Arg
 180 185 190
 Pro Ser Arg Gly Leu Thr Pro Asp Pro Asn Ile Leu Leu Gln Pro Thr
 195 200 205
 Thr Glu Asn Ile Pro Glu Thr Val Val Ser Arg Glu Phe Pro Arg Trp
 210 215 220

Val His Ser Ala Glu Pro Thr Tyr Phe Leu Arg His Ser Arg Thr Pro
 225 230 235 240
 Ser Ser Asp Gly Thr Val Glu Val Arg Ala Leu Leu Thr Trp Thr Leu
 245 250 255
 Asn Pro Gln Ile Asp Asn Glu Ala Leu Phe Ser Cys Glu Val Lys His
 260 265 270
 Pro Ala Leu Ser Met Pro Met Gln Ala Glu Val Thr Leu Val Ala Pro
 275 280 285
 Lys Gly Pro Lys Ile Val Met Thr Pro Ser Arg Ala Arg Val Gly Asp
 290 295 300
 Thr Val Arg Ile Leu Val His Gly Phe Gln Asn Glu Val Phe Pro Glu
 305 310 315 320
 Pro Met Phe Thr Trp Thr Arg Val Gly Ser Arg Leu Leu Asp Gly Ser
 325 330 335
 Ala Glu Phe Asp Gly Lys Glu Leu Val Leu Glu Arg Val Pro Ala Glu
 340 345 350
 Leu Asn Gly Ser Met Tyr Arg Cys Thr Ala Gln Asn Pro Leu Gly Ser
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 35 40 45
 Val Tyr Lys Gly Gly Arg Glu Arg Thr Glu Glu Gln Lys Glu Glu Tyr
 50 55 60
 Arg Gly Arg Thr Thr Phe Val Ser Lys Asp Ser Arg Gly Ser Val Ala
 65 70 75 80
 Leu Ile Ile His Asn Val Thr Ala Glu Asp Asn Gly Ile Tyr Gln Cys
 85 90 95
 Tyr Phe Gln Glu Gly Arg Ser Cys Asn Glu Ala Ile Leu His Leu Val
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 115 120 125

Thr Leu Ser Leu
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Gly Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala
 35 40 45

Glu Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val
 50 55 60

His Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln
 65 70 75 80
 Tyr Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg
 85 90 95
 Ile Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr
 100 105 110
 Gly Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu
 115 120 125
 Leu Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Thr Gly
 130 135 140
 Tyr Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe
 145 150 155 160
 Pro Arg Pro Thr Ala Lys Trp Lys Gly Pro Gln Gly Gln Asp Leu Ser
 165 170 175
 Thr Asp Ser Arg Thr Asn Arg Asp Met His Gly Leu Phe Asp Val Glu
 180 185 190
 Ile Ser Leu Thr Val Gln Glu Asn Ala Gly Ser Ile Ser Cys Ser Met
 195 200 205
 Arg His Ala His Leu Ser Arg Glu Val Glu Ser Arg Val Gln Ile Gly
 210 215 220
 Asp Thr Phe Phe Glu Pro Ile Ser Trp His Leu Ala Thr Lys Val
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<210> 49

<211> 222

<212> PRT

<213> Homo sapiens

<400> 49

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 Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala Glu
 20 25 30
 Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val His
 35 40 45
 Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln Tyr
 50 55 60
 Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg Ile
 65 70 75 80
 Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr Gly
 85 90 95
 Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu Leu
 100 105 110

Gln	Val	Ser	Ala	Leu	Gly	Ser	Val	Pro	Leu	Ile	Ser	Ile	Thr	Gly	Tyr
	115						120					125			
Val	Asp	Arg	Asp	Ile	Gln	Leu	Leu	Cys	Gln	Ser	Ser	Gly	Trp	Phe	Pro
	130					135					140				
Arg	Pro	Thr	Ala	Lys	Trp	Lys	Gly	Pro	Gln	Gly	Gln	Asp	Leu	Ser	Thr
145					150					155					160
Asp	Ser	Arg	Thr	Asn	Arg	Asp	Met	His	Gly	Leu	Phe	Asp	Val	Glu	Ile
				165					170					175	
Ser	Leu	Thr	Val	Gln	Glu	Asn	Ala	Gly	Ser	Ile	Ser	Cys	Ser	Met	Arg
			180					185					190		
His	Ala	His	Leu	Ser	Arg	Glu	Val	Glu	Ser	Arg	Val	Gln	Ile	Gly	Asp
		195					200					205			
Thr	Phe	Phe	Glu	Pro	Ile	Ser	Trp	His	Leu	Ala	Thr	Lys	Val		
	210					215					220				

**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Page 115, Table 1.

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☐

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)

10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit

August 7, 2000

Accession Number

PTA-2332

C. ADDITIONAL INDICATIONS (leave blank if not applicable)

This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

For receiving Office use only			For International Bureau use only		
<input checked="" type="checkbox"/> This sheet was received with the international application			<input type="checkbox"/> This sheet was received by the International Bureau on:		
Authorized officer <i>Vonessa E. Clark</i>			Authorized officer		

ATCC Deposit No. PTA-2332

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No. PTA-2332

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.